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Case Report

Spontaneous Remission of Large Mandibular Radiolucency Confirmed with CBCT 3D Radiography Over 5 Years Follow-Up Period

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Received: July 29, 2019; **Published:** August 16, 2019

Abstract

The increased hydrostatic/osmotic pressure with a cystic cavity is being among the earliest and the most accepted theories for the expansion of odontogenic cysts. This article presents a case of a large mandibular radiolucency most likely a dentigerous cyst related to impacted lower right third molar, but due to lack of histopathological confirmation, it will be referred to as mandibular radiolucency. The patient refused any surgical intervention after being warned about possible surgical complications. Therefore, he was kept under close follow-up. Interestingly, the lesion healed spontaneously as it grows bigger and most likely burst and communicates with the oral cavity. The bone regeneration is being confirmed with a series of CBCT with 3D reconstruction over 5 years follow-up period. The use of CBCT confirmed beyond doubt the total remission of the lesion, unlike previously reported similar cases where only plain radiography was used.

Keywords: *Spontaneous Remission; Mandibular Radiolucency; CBCT Radiography*

Abbreviations

CBCT: Cone Beam Computerized Tomography; 3D: Three Dimensional

Introduction

Although many new theories were being proposed to explain the pathogenesis of dentigerous cyst expansion, still the theory of hydrostatic and the increased osmotic pressure is being favored by many, if not most, of the researchers. In addition, the increased hydrostatic pressure theory led to the acceptance and development of the marsupialization surgical technique in the management of large cysts especially for those involving vital structures, or when complete enucleation carries with it more serious surgical complications. Very rarely dentigerous cysts were reported to heal spontaneously without any form of surgical intervention, and in such cases, the lesion should be referred to as "mandibular or maxillary radiolucency" due to the absence of histopathologic confirmation even in presence of all other characteristics of dentigerous cysts.

Aim of the Study

1. To highlight the importance of a more conservative approach in the management of large benign lesions especially if the case can be monitored closely and the patient is not willing to undergo a more radical surgical treatment.

2. To present the diagnostic and confirmatory value of CBCT with 3D reconstruction in the management of lesions involving or in close proximity to vital structures in the dento-facial region.

Case Report

45 years old medically fit Saudi male patient was referred to the oral and maxillofacial surgery clinic with the complaint of an impacted mandibular right side 3rd molar. A patient complained of pain upon biting and clenching of his jaws. Extraoral examination showed no anomaly. Intraoral examination showed slight swelling distal to the mandibular right 2nd molar. Initially, the patient's Ortho-Pantomo-Graphic x-ray showed a deeply impacted lower right third molar (#48) with a related large radiolucent lesion and very close proximity to the inferior dental canal and its related structures. Based on clinical and preliminary radiographic examination the differential diagnosis of the lesion included; dentigerous cyst, odontogenic keratocyst, and ameloblastoma. The patient was then referred for Cone Beam Computerized Tomography (CBCT) with 3D reconstruction for a better assessment of the case.

The CBCT with a 3D radiographic examination showed the presence of mandibular radiolucency related to the horizontally and transversely impacted mandibular right third molar. The patient was advised surgical intervention as the treatment of choice for his case, but the patient refused although he was informed about all possible serious complications as a consequence of not having immediate treatment. Therefore, he was kept on observation and was given an appointment after 3 months but he attended for follow up after 6 months. In the second visit, the patient mentioned that he felt a salty discharge in his mouth. It was assumed that maybe the cyst had ruptured and the cystic fluid had drained through the oral cavity. The patient no longer complained of any pain. Intraoral examination showed that the swelling had subsided. New CBCT was requested, and it showed noticeable improvement with bone formation at the area of the cystic lesion. The patient was given another appointment after 6 months. In the third visit almost 2 years later the CBCT showed further improvement in bone healing. In the fourth visit 5 years after the patient's initial presentation, the new CBCT showed that the bone had completely healed and there was no trace of the radiolucent lesion remaining.

The changes and the improvement of both the bone regeneration and the impacted tooth position are presented in figures 1-4 showing the changes in the CBCT with 3D from April 2014 (first patient's presentation), to February 2016 (two years later), and finally in February 2019. Furthermore (Figure 5) showed the improvement between the initial presentation in 2014 and two years later in 2016. Due to the pitfalls of the OPG as compared to all the diagnostic advantages of the CBCT, after 2016 only the CBCT was used to monitor the prognosis of the lesion over the follow-up period. Both radiographic techniques namely, the CBCT and the OPG x-ray confirmed that the lesion healed spontaneously without surgical intervention, but with superiority confirmation using the CBCT.

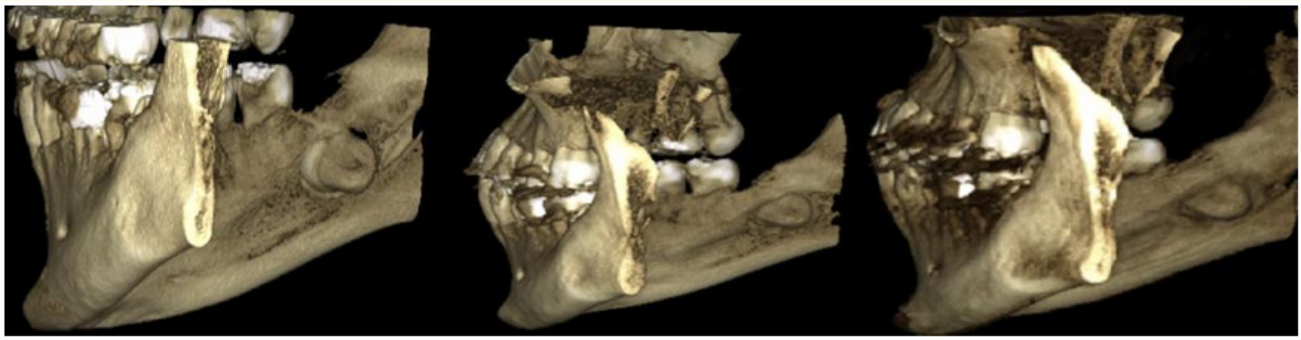

Figure 1: *3D lingual view showing the amount of bone destruction related to the impacted #48 in the first visit 2014 and the healing process in the next visits 2016 and 2019.*

Figure 2: *3D buccal view showing the amount of bone destruction related to the impacted #48 in the first visit 2014 and the healing process in the next visits 2016 and 2019.*

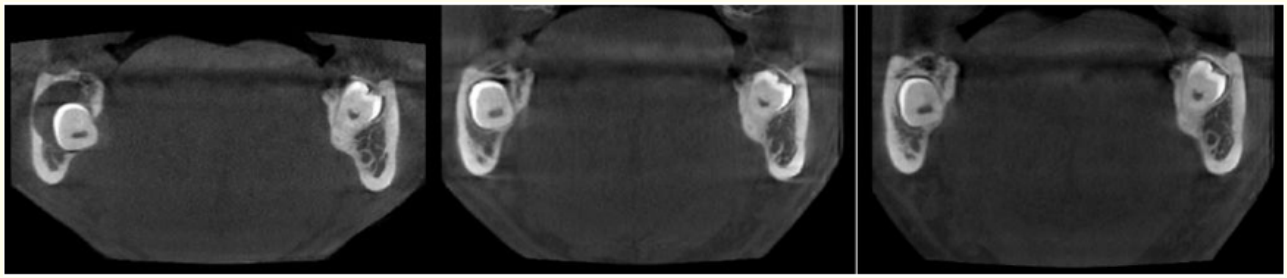

Figure 3: *CBCT coronal view showing the radiolucency related to the impacted #48 and the healing process of the lesion without surgical intervention over 5 years between 2014 and 2019.*

Figure 4: *CBCT axial view showing the radiolucency related to the impacted #48 and the healing process of the lesion without surgical intervention over 5 years between 2014 and 2019.*

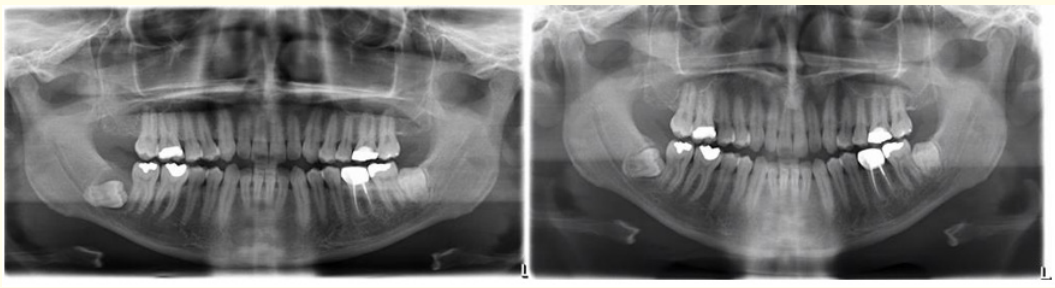

Figure 5: *OPG showing the radiolucency related to the impacted #48 and the healing process of the lesion without surgical intervention between 2014 and 2016.*

Therapeutic intervention: Mandibular radiolucency related to the horizontally and transversely impacted mandibular right third molar. The patient was advised surgical intervention as the treatment of choice for his case, but the patient refused although he was informed about all possible serious complications as a consequence of not having immediate treatment. Therefore, he was kept on observation (Figure 6).

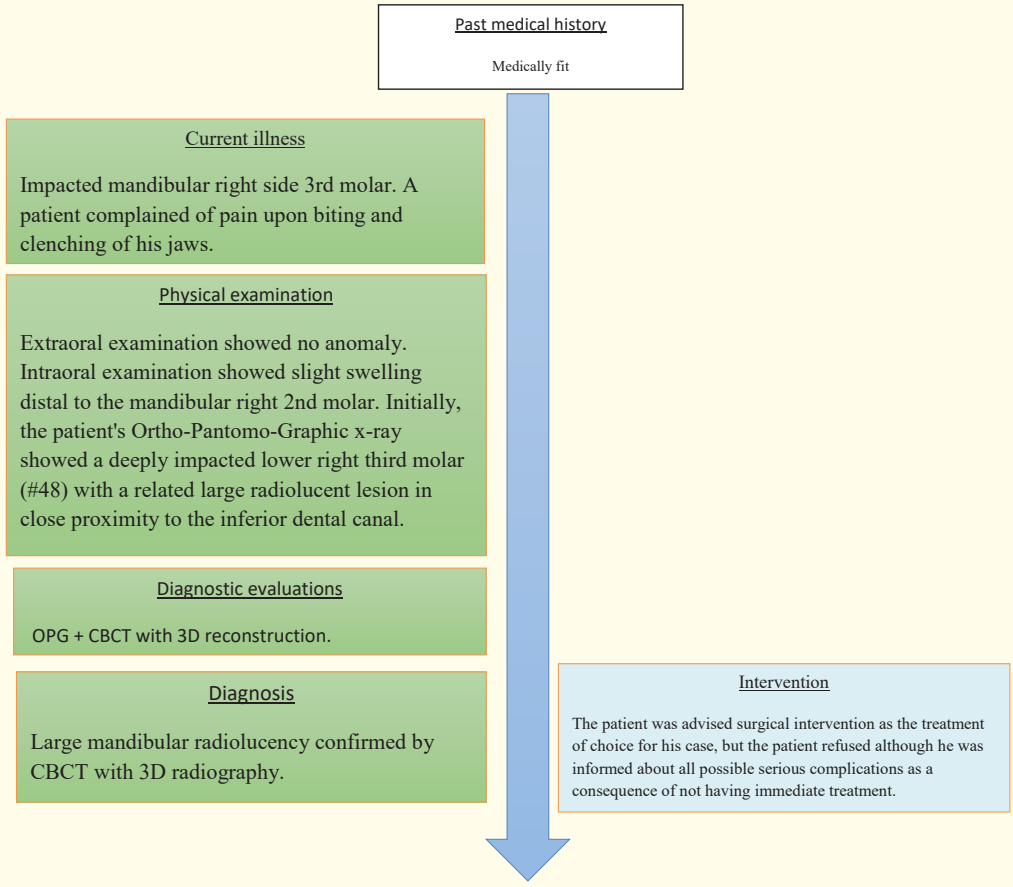

Figure 6: *Patient's timeline.*

Results

The lesion healed spontaneously without any form of surgical intervention.

Discussion

The presented case although it exhibits most of the diagnostic features of a dentigerous cyst in-term of radiographic and clinical presentation, still due to the missing of histopathological confirmation, the case will be referred to as a mandibular radiolucent lesion. Different theories were being proposed in an attempt to explain the pathogenic pathway responsible for the formation and the spontaneous remission of dentigerous cysts, but these remain beyond the scope of this article.

Five similar cases were being reported in the medical literature earlier [1-5], with one of these reports presenting spontaneous remission of bilateral mandibular lesions [4,5]. Unfortunately, all the previously published reports suffered a great fallback in regards to the confirmation of the process of self-remission of these lesions as they all depend on plain radio-graphical examination namely; Ortho-Pantomo-Graphic (OPG) x-ray examination. The use of OPG to confirm such changes is being criticized by the fact the accuracy of the x-ray images can be affected by even minimal changes in the patient's anterior-posterior position of the patient's chin in the follow-up x-ray examinations may overthrow a shadow masking any real changes in these lesions [6,7].

Lately, in 1998 the use of CBCT with 3 D reconstruction added a lot to the diagnostic values of dental radiology techniques. CBCT allows not only viewing the dento-facial structures in the axial plane but also in coronal, sagittal and even oblique or curved image planes. In addition, CBCT data can be also used to provide 3-dimensional (3D) information. An advisory statement from the American Dental Association Council on Scientific Affairs issued on the Practice Implications of CBCT in dentistry as quoted "As with other radiographic modalities, CBCT imaging should be used only after a review of the patient's health and imaging history and the completion of a thorough clinical examination. Dental practitioners should prescribe CBCT imaging only when they expect that the diagnostic yield will benefit patient care, enhance patient safety or improve clinical outcomes significantly" [8].

In the current case report, therefore, these guidelines were followed and applied for better monitoring of the progress of the pathological condition especially with the patient's continuous refusal to undergo any surgical treatment, and also to confirm the complete remission of the lesion over the follow-up period. The differences between the amount of information gained and the diagnostic value between the two radiographic techniques used were incomparable. The CBCT with 3D reconstruction was very superior both diagnostically and confirmatory to the changes in the lesion when compared to the OPG technique. Therefore, we do recommend the use of CBCT radiographic examination whenever it is available for proper management and follow-up of all dento-facial pathologies especially when the lesion is in close proximity to vital structures.

Conclusion

Spontaneous remission and healing of relatively large odontogenic lesion can happen over time. This case highlights the value of close monitoring of these cases especially if the patient refused a radical treatment or suggested treatment carries with it a number of possible complications.

In addition, the use of CBCT with 3D reconstruction was very confirmatory for the remission of the lesion, unlike with previously published similar cases where plain x-ray views were only used.

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Volume 18 Issue 9 September 2019